

IN THE CLAIMS

Please cancel claims 9 and 20 without prejudice or disclaimer, amend claims 1, 5, and 8, and add new claims 28-30 as set forth below.

1. (Currently Amended) An optical head, comprising:

a first laser light source having a first oscillation wavelength for reading or recording data from a recording medium and a second laser light source having a second oscillation wavelength different from the first oscillation wavelength, said first and second laser light sources being mounted to a recessed surface in a recess formed in a substrate, ~~a surface of which has~~ said substrate having been partially removed to form the recess;

a mirror constituting a part of said recess, and arranged to reflect laser beams emitted from said first and second laser light sources to be outputted in a direction away from and normal to the substrate surface;

first photodetector means for obtaining out-of-focus detection signals based on the laser beams which have returned after being reflected by a surface of said recording medium, second photodetector means for obtaining a tracking error detection signal and an information reproduction signal, and

third photodetector means for monitoring the quantity of light emitted from the first or the second laser light source; and

in said first photodetector means, first detecting means for detecting the out-of-focus detection signal based on the laser beam from the first laser light source, and second detecting means for detecting the out-of-focus detection signal based on the laser beam from the second laser light source, said first and second detecting means being spaced away from each other,

wherein said mirror, said first photodetector means, said second photodetector means, and said third photodetector means are formed in said substrate monolithically, and wherein a thickness of the substrate in said recess is thinner than a region of the substrate that has not been partially removed to form said recess.

Claim 2 (Canceled)

3. (Original) An optical head according to claim 1, wherein said recording medium is any one of an optical information recording and reproducing medium, an optical information reproducing medium, a magneto-optic information recording and reproducing medium, a magneto-optic information

reproducing medium, an optical information recording and reproducing disc, an optical information reproducing disc, a magneto-optic information recording and reproducing disc, and a magneto-optic information reproducing disc.

4. (Original) An optical information recording/reproducing apparatus or an optical information reproducing apparatus, having the optical head of claim 1, wherein a laser light source having an oscillation wavelength of 660 nm is used in the case where the recording medium is a DVD medium, while a laser light source having an oscillation wavelength of 780 nm is used in the case where the recording medium is a CD medium.

5. (Currently Amended) An optical head according to
claim 1, wherein, comprising:
said first and second oscillation wavelengths are each
determined in accordance with the type of said recording
medium, and wherein said laser light sources are used
selectively in accordance with the type of the recording
medium and in conformity with a read wavelength a first laser
~~light source having a first oscillation wavelength for reading~~
~~data from a recording medium and a second laser light source~~

having a second oscillation wavelength different from the first oscillation wavelength, said first and second laser light sources being mounted in a recess formed partially in a surface of a substrate;

— said first and second oscillation wavelengths being each determined in accordance with the type of said recording medium, wherein said laser light sources are used selectively in accordance with the type of the recording medium and in conformity with a read wavelength;

— a mirror constituting a part of said recess, and arranged to reflect laser beams emitted from said first and second laser light sources to be outputted in a direction away from and normal to the substrate surface; and

— first photodetector means for obtaining out of focus detection signals, second photodetector means for obtaining a tracking error detection signal and an information reproduction signal, and third photodetector means for monitoring the quantity of light emitted from the first or the second laser light source;

— wherein said first photodetector means includes means for detecting the out of focus detection signal based on the beam from the first laser light source and means for detecting the

~~out of focus detection signal based on the beam from the second laser light source.~~

Claims 6 (Canceled)

7. (Previously Presented) An optical head according to claim 1, wherein said first and second laser light sources are disposed adjacent to each other so as to permit a single optical path to be used in the optical head.

8. (Currently Amended) An optical head according to claim 1, wherein, comprising:

said substrate and said first laser light source are optically aligned with each other on the basis of alignment marks affixed to the substrate and the first laser light source, respectively, and said substrate and said second laser light source are aligned with each other optically or by image processing on the basis of alignment marks affixed to the substrate and the second laser light source, respectively—a first laser light source having a first oscillation wavelength for reading data from a recording medium and a second laser light source having a second oscillation wavelength different from the first oscillation wavelength, said first and second

laser light sources being mounted in a recess formed partially in a surface of a substrate;

— wherein said substrate and said first laser light source are optically aligned with each other on the basis of alignment marks affixed to the substrate and the first laser light source, respectively, and said substrate and said second laser light source are aligned with each other optically or by image processing on the basis of alignment marks affixed to the substrate and the second laser light source, respectively;

— a mirror constituting a part of said recess, and arranged to reflect laser beams emitted from said first and second laser light sources to be outputted in a direction away from and normal to the substrate surface, and

— first photodetector means for obtaining out of focus detection signals, second photodetector means for obtaining a tracking error detection signal and an information reproduction signal, and third photodetector means for monitoring the quantity of light emitted from the first or the second laser light source, said first, second, and third photodetectors being formed monolithically on the substrate, and

— said first photodetector means having means for detecting the out of focus detection signal based on the laser beam from

~~the first laser light source and means for detecting the out-of-focus detection signal based on the laser beam from the second laser light source.~~

9. - 27. (Canceled)

28. (New) An optical head according to claim 1, wherein said first and second laser light sources are soldered on said substrate.

29. (New) An optical head according to claim 1, wherein a spacing D between a first light spot of said first laser source and a second light spot of said second laser light satisfies the following equation,

$$D = fc \times (\lambda_b - \lambda_a) / P,$$

fc being a focal distance of a collimator lens, where is provided between said substrate and said recording medium,

λ_b being the second oscillation wavelength,

λ_a being the first oscillation wavelength, and

P being grating pitches of four regions in a grating provided between said substrate and said recording medium.

30. (New) An optical head according to claim 1, wherein
the mirror composes a wall of said recess.